Appendix B

SOW 6643-A-0398

Aircrew Procedures Trainer (APT)
CH-46E Device 2F172 S/N 001

TABLE OF CONTENTS

Appendix B

SOW 6643-A-0398

Trainer Description for Device 2F172 APT

Located at MCAS Futenma, Japan

1.1 TRAINER DESCRIPTION

1.1 Function and General Description:

a. The APT was built by Aero Simulation Inc. (ASI)located in Tampa, FL., for deployment to MCAS Futenma, Japan. The CH-46E APT is installed in a self-contained facility which requires external power to operate. The CH-46E APT is designed to provide the required training in cockpit procedures with basic flight and navigation capabilities. Device 2F172 provides on-the-ground cockpit familiarization for trainee pilots on the CH-46E assault transport helicopter, manufactured by Sikorsky Aircraft Division of United Technologies. This device provides a means for training and evaluating student pilots in the following areas:

- Pre-Flight and starting procedures
- Shutdown and post-flight procedures
- Aircraft Maneuvers
- Normal and emergency procedures
- Loading operations
- Normal and Water-based landing and takeoff procedures
- Instrument flight procedures
- Normal shipboard/carrier procedures
- Electronic warfare procedures
- Night Vision Goggle (NVG) operations
- Tactical mission
- Crew coordination

b. The APT consists of seven (7) functional systems: training station, visual system, instruction station, computer system and peripherals, Input/output (I/O) system, communications system, and power distribution system to include an UPS system.

c. The APT simulates the accuracy and response of the CH-46 helicopter controls, instruments, flight performance and characteristics, tactical and weapon systems. This simulation is supported by a visual system that presents realistic images of ground features, horizon, sky and cloud deck as view from the cockpit. An aural system generates environmental tones within the training area. The APT provides an instructor station located at the rear of the trainee station.

Appendix B

SOW 6643-A-0398

1.2 Trainee Station:

1.2.1 The simulated cockpit represents the actual helicopter's cockpit interior insofar as what is ultimately visible/usable to the pilot and copilot trainees. The cockpit's interior shell dimensions approximate those of the operational aircraft except for the rear bulkhead and a stowed main distribution box. The trainer's cockpit assembly provides a simulated environment for the pilot and copilot, providing them with a realistic-appearing cockpit made up of actual, modified, or simulated panels, console, indicators, controls (primary, secondary, and operational), seats, etc. The intent is to faithfully reproduce both the actual aircraft's normal and emergency flight characteristics, promoting a high fidelity and useful level of training.

The cockpit has numerous assemblies and subassemblies attached for providing the necessary components needed to ensure trainer functionality and a normal appearance. Others are supplied only as a requirement because the APT is not an actual aircraft by design. Trainer specific components include items such as headset boxes, seat-shakers, distribution panels, speakers, rudder pedal solenoids/relays, servo amplifier card file (p/o simulated standby compass), emergency power off box, etc. Trainer specific locations have been altered for items such as the radar signal driver (p/o APR-39 system).

1.2.2 The trainee station cockpits encompasses the following sub-systems:

a. Power-plant Systems. The engines of the design basis aircraft are simulated together with the related controls, control and instruments. Static and dynamic engine performance is simulated along with the associated instrument indications, fuel consumption, and sound.

b. Fuel System. The fuel system of the designed aircraft simulates the following: quantity indications, fuel available logic, weight, and center of gravity. Instructor controls are provided to vary the total fuel quantity, limiting the range of the simulated mission. The instructor may freeze the fuel system, at any point during the mission.

c. Secondary Power System. The functions of the secondary power system of the design basis aircraft are simulated together with the related control, indications, and displays.

d. Electrical Power Supply System. The electrical system is simulated to the extent of cockpit indications and control and bus logic for the generators, utility and emergency electrical backup system.

e. Flight Control System. The design of the basis aircraft flight control system provides the simulation for feel and aerodynamic response. Simulated operation of the primary flight control is implemented by actual aircraft collective, cyclic, and adjustable rudder pedals at each pilot's position. These controls are connected to electric control loaders and actuators that are part of the SCT Model 2050 4-axis control loading system. The CLS provides the pilot and copilot with a control force "feel" which simulates the actual aircraft primary flight controls. The CLS simulates the correct position response corresponding to an applied force. This allows

primary flight control displacement and is based on the difference between the force applied by the pilot/copilot and the force exerted by the electrical loader in the CLS. The control loader will respond, both statically and dynamically, as the actual helicopter controls. Separate control loaders and actuators are used for each axis of aircraft motion (pitch, roll, yaw and collective). An AURA Audio System seat shaker is used to provide additional sensory input to the pilot and co-pilot.

g. Automatic Flight Control System (AFCS). Dynamic simulation of the AFCS is provided.

h. Instruments, Indicators, and Displays. The interior cockpit uses faithful replicas and/or same indicators, controls and instruments as found in the production aircraft.

i. Fire Detection/Extinguishing Systems. The fire detection/extinguishing system is simulated to the extent of cockpit indication and engine performance.

j. Entrance/Egress System. N/A

k. Ejection Seat. N/A

l. Environmental Control System. Non-Functional

m. Communications-Navigation-Identification Equipment

(1) Audio System The Audio System is used to provide simulated aircraft navigation reception (navigational equipment tones), VHF/UHF COMM reception (voice audio), communication sidetones and ICS reception to the flight crew. The system provides for instructor monitoring of and private communication with the pilot and copilot. The system also provides for instructor communication on selected VHF/UHF radio channels to and from the flight crew. Another function of the audio system is to generate both simulated aircraft and aircraft related sounds or aural cues, as heard from the cockpit. These sounds include engines, rotors, air rush, environmental effects, etc.

1.3 Instructor Operator Station (IOS)

1.3.1 Instructor Operator Station (IOS): The instructor station is integral with the control station. The instructor station is located immediately aft of the cockpit rear bulkhead. The equipment included provides the components necessary for controlling/monitoring the training mission. This area affords a sitting instructor with the means of direct observation of the trainee’s actions, cockpit instruments, visual scene being displayed, etc. The desk houses IOS and TEN monitor, as well as input/control peripherals (keyboards, trackball, and mouse) that are attached to their connected computers. Related power devices and the instructor’s communication (COMM) panel are mounted to the interior side of the desk. The COMM panel and connected footswitch (located beneath desk) provide the instructor with the hardware necessary to connect, activate and adjust communications with the trainee(s). A commercial headset must be worn by the instructor and plugged

into the panel. The IOS monitor attached to the I/O cabinet is considered part of the instructor station but designated 6A12 (function versus physical location).

1.3.2 Instructor Control And Display System. The Instructor Control and Display System allow the instructor/operator to set up and control the training environment and monitor and evaluate pilot and copilot performance. The system allows an instructor to control a crew training lesson plan and insert simulated aircraft equipment malfunctions, testing trainees' knowledge and response to emergency conditions. The system provides for the changing and monitoring of aircraft and environmental parameters and communication and navigational data. Selections and changes are made via the menus and displays with their associated parameter and selection sources.

1.3.3 IOS Monitors: The two high resolution color monitors display data initiated by the computer. These displays are interactive and through the various window presentations allow the instructor to control all the aspects of the training scenario. One monitor is controlled to display the map information windows. In these windows are provided information on Cross Country, Flight Status, Navigation/Communication Status, Advisory Panel, Caution Panel, and the Menu Bar as basic instructor tools. Additional windows that are viewed on the map monitor include the Approach Window, Ground Control Approach Window, Moving Map, Sling/Land and Hook views.

The other monitor is controlled to display the mission information windows, such as the Engine and Flight Instruments Window, Flight Icons Window, Time of Day Window, Mission Status Window, Malfunction/ Circuit Breakers Window, Trainer Control and the Menu Bar. Additional windows include the Record/ Playback Demo Window, Latitude and Longitude, Preprogrammed Malfunctions Window, Malfunction Code Window, Critique Window, DRED Window, and the Flight Plan Window.

1.3.4 IOS Trackball: The IOS trackball is the primary device used to interact with the window interface by positioning the pointer and selecting window options. The trackball is connected to the IOS computer via an interconnection to the COM 1/COM 2 card.

1.3.5 The principal components are:

a. Console with a work surface

b. Visual Monitors (CRT) for Trainee Station displays selectable functions to allow for various monitoring criteria.

c. Input Devices, e.g. keyboards, mouse, trackball etc.

d. Communication equipment, e.g. headset and control, speakers, microphone and volume controls.

1.4 Tactical Environment Network (TEN)

1.4.1 Simulated Tactical Environment: A tactical environment is simulated in the APT by providing a means for inserting both friend and foe

players that are computer-controlled to support training in tactical navigation, weapons delivery (countermeasures), radar operation, FAC(A), etc. Types of players available for insertion include land vehicles, aircraft, boats, air defense assets, and miscellaneous objects. A map is provided to show own-ship and player(s) movement through the tactical environment. The instructor has control of the player's configured weapons load (if applicable), sensor enabling/disabling, etc. This tactical capability is provided by the Tactical Environment Network (TEN) equipment/software and not by the Instructor/Operator Station (IOS).

1.4.2 TEN Operational Overview: The APT's tactical environment is defined through scenario development and controlled from the Tactical Operators Station (TOS). The TOS is the interface component of the Tactical Environment Network (TEN) and resides on the right hand side of the instructor desk. It consists of a monitor, keyboard, and mouse. A PC based computer chassis resides in the Electronics Equipment Cabinet.

1.4.3 Operating Modes: The TOS (TEN) operates in one of two modes: IC Modifications (with a Preprogrammed Flight Path sub-mode) or Tactical Modes. When the APT is in IC freeze mode, the TOS is automatically set to the IC Modifications Menu. In this mode, the operators can add/modify/delete tactical players, add/modify/delete formations, and add/modify/delete preprogrammed flight paths. Once taken out of freeze, the TOS automatically converts to the Tactical Mode. During this mode, tactical players can be controlled and deleted. In addition, the interface allows the operator to role-play artillery, naval gunfire, or close air support. The TOS provides the SAC(A) menu that enables events through assignment of bomb (500 or 1,000 pound), smoke (big or small white smoke), or flares. These are normally used in conjunction with FAC(A) exercises when the trainee calls for fire. Bomb events can be programmed for Time Of Flight or Time On Target. Flare events are programmed for Time On Target and Flare Altitude.

1.4.4 Global Positioning System: The TrueTime, Inc. time and frequency receiver mounted in the electronics equipment cabinet is a fully functional Global Positioning System (GPS) receiver used to provide a highly precise and coordinated clock signal to the TEN computer. The unit functions by decoding the signals from the GPS satellites, received through the antenna mounted to the exterior of the shelter, and passing those signals to the TEN computer's internal timing card. Although the GPS receiver will display real-time, real-world position information, this data is ignored by the computer system.

The TEN computer utilizes this GPS-received time signal in order to synchronize to other TEN computer's while operating in a networked environment. By using a world-wide, synchronized time system, the TEN computer located on the APT has the potential to be connected and linked to another device anywhere in the world that can also access this same GPS time signal.

Since all TEN computer's operating on a network need to have access to the same time information, the CH-46E APT provides two (2) external connection points for sharing this data between co-located WESTPAC trainers. This design approach provides lower initial and life cycle costs by using only 1 receiver

for up to 3 devices and ensures that all trainers will be receiving the same data. This transfer of time information is accomplished by using industry-standard RG-58A coaxial cable. In order to provide a clean, non-degraded signal to all devices, the APT employs a TrueTime, Inc. down-converter to boost and filter the received signal and minimize signal loss due to physical cable limitations.

1.5 Computer System, Peripherals, and Interface Cabinets:

10.5.1 The Host computer system consists of a dual 500 MHz Pentium III single board computer, LINUX Operating System and associated software to run and control the device. The host computer provides all necessary interfacing consisting of a fiber-optic VMIC Reflective Memory card, a fiber-optic SCRAMNet Reflective Memory card, two 3COM Etherlink network cards, a dual-port video card, a TR-DP2 COM1/COM2 card and a CIO-INT32 real time interrupt card to support the trainer simulation. Computer peripherals installed on the system include the following: floppy drive, CD-ROM drive, and SCSI hard drive, and an 8 GB tape drive.

1.6 Aircraft Common Subsystems:

1.6.1 These Subsystems include the Heads Up Display (HUD), Control Data Navigation Unit (CDNU), ARD-210 radios, Ground Proximity Warning System (GPWS), Mission Data Loader (MDL), 8-day clocks, seats, cyclic stick and collective.

1.7 Power System:

1.7.1 Trainer uses both conditioned and unconditioned AC power, all of which is developed and passed by components found in the Government furnished shelter assembly. Emergency backup power, monitoring circuits, safety circuits, lighting, and utility power is also provided by the shelter components. DC power required by the trainer equipment is developed from the conditioned power received from the shelter and distributed where required. Cockpit lighting is also developed for trainer use. Trainer power safety circuits are provided for emergency lighting, emergency power-off, and power-off due to over-temperature conditions.

1.7.2 Facility Power System: The shelter and trainer assemblies require 120/208V, 3-phase, 60 Hz facility power in the 5-wire configuration, i.e., phase A, phase B, phase C, neutral, and ground. Power is supplied internally by way of the power/signal I/O panel located on the shelter's exterior. Two separate services are provided: a 200 amp service for use by the secondary shelter components requiring unconditioned power and a 100 amp service for the primary components requiring conditioned power (includes the shelter UPS, shelter safety circuits, visual system, and trainer equipment)
.

1.7.3 Trainer AC Power Distribution System: Trainer AC power is distributed to trainer equipment in the form of 60 and 400 Hz power. The following paragraphs provide a functional description of those systems.

1.7.3.1 60 Hz AC Power Distribution: During normal operation, 60 Hz conditioned power is routed from the UPS to the trainer equipment by way

of shelter power distribution panel PDP-2. This panel houses numerous single-phase and three-phase subsystem breakers. 60 Hz power is required for items such as power supplies, COTS equipment, utility outlets, etc., most of which is cabled to end equipment by way of outlet strips or receptacles.

During normal operation, 60 Hz conditioned power is routed from the UPS to the trainer equipment by way of shelter power distribution panel PDP-2. This panel houses numerous single-phase and three-phase subsystem breakers. 60 Hz power is required for items such as power supplies, COTS equipment, utility outlets, etc., most of which is cabled to end equipment by way of outlet strips or receptacles.

1.7.3.2 400 Hz AC Power Distribution: An Elgar Electronics Corp. single-phase 400 Hz continuous wave power supply (Model CW801M) is provided in the base frame for use by actual aircraft components within the trainer. Equipment requiring 400 Hz includes the pilot and copilot HHSIs, GPWS processor, and signal data converter. In addition, 400 Hz reference is provided to the VME chassis synchro card for creating drive signals for the HHSIs and the signal data converter. The 400 Hz power supply (frequency converter) has been set to generate a voltage level of 115 VAC.

400 Hz power is distributed to the equipment by way of a 400 Hz distribution panel. The distribution panel houses the 28 VDC relays (6) necessary to allow malfunction insertion under host computer control. Power is removed from or placed on equipment as software dictates. The panel also houses a step-down transformer for converting the 115 VAC to 26 VAC.

1.7.4 Uninterruptible Power Supply (UPS): A Mitsubishi 2033C series 20KVA uninterruptible power supply (UPS) with associated battery cabinet/batteries is part of shelter assembly. Under normal circumstances, it provides for continuous and clean (conditioned) electrical power to the trainer critical loads. The UPS receives input facility power from a 100 amp main circuit breaker and its outputs are routed to power distribution panel PDP-2. The UPS has four operational modes:

- Normal - Facility power is converted to dc and passed to both the battery charging system and the unit’s inverter circuitry. The inverter converts the DC power to clean, conditioned AC power. Voltage transients and/or fluctuations is eliminated by this process and the output sent to the critical load. Batteries are constantly being charged during normal operation.

- Internal Bypass - An automatic mode in which unconditioned facility power is passed directly to load via an internal static bypass switch. Internal Bypass mode is active when the UPS module is de-energized prior to selecting the START button (if currently off with facility power present) and active momentarily during initial UPS start-up. UPS automatically switches to Normal mode when the unit has been switched on and is ready to start conditioning power.

- Battery - Mode entered automatically when facility power is interrupted. Load powered through internal inverter under battery input to maintain

continuous AC power. Mode remains until facility power is returned or until battery power is exhausted to the inverter (low battery shutdown occurs). The converter automatically restarts operation in the Normal mode when facility power is restored.

- Maintenance Bypass - A user selectable mode for diverting facility power directly to the load. For use during maintenance or when the internal circuits of the UPS are not functioning properly. Provides the means of supplying temporary unconditioned power to the load. A rotary Maintenance Bypass switch, located behind the cabinet front door (lower section), is provided to manually place the unit in Maintenance Bypass mode. This switch should never be used while the UPS is operating in Normal mode. The UPS must be in Internal Bypass mode before placing the switch to the TRANSFER or BYPASS positions.

Numerous controls/indicators are provided on the UPS for starting, stopping, initiating emergency power off (for UPS unit only), reporting modes, reporting failure codes, silencing an audible alarm, and clearing faults.

1.8 Visual System:

1.8.1 The Ch-46 trainer consist of four (4) Barcographic projectors, type Barco 808C, mounted onto the ceiling of the enclosure. The visual system displays the out-the-window (OTW) visual scenes to support the student training. Scenes are generated via modeled databases stored in the IG combined with simulated on-ground and in-flight inputs from the student pilot interfacing with cockpit controls. The field of view (FOV) for each of the OTW channels is software controllable to match the applicable projection system. Visual system provides a continuous FOV that extends one hundred fifty (150) degree on horizontal plane at zero (0) degrees elevation and fifty-five (55) degrees up in vertical plane at zero (0) degree azimuth and 45 degrees down and 20 degrees up at +/-60 degrees azimuth as limited by the fuselage. The Visual gaming area databases covering Okinawa, East Coast, West Coast and Korea.

1.8.2 Image Generator (IG). The IG provides the graphic processing resources necessary to develop the image being projected on the visual screen. The IG databases incorporate the use of both primary and generic airfields that include runways with lighting, markings, and buildings where applicable. The database consists of a polygonal, global textured terrain skin decorated with two- and three-dimensional features models, dynamic moving models and special effects.

1.8.3 Visual Screen. Visual screen is a flat vinyl screen stretched onto a rigid modular frame. A vacuum pump is used to create negative pressure behind the screen surface thus forcing the vinyl to contour to the shape of the frame.

1.9. Motion System: Seat shaker

1.10 Air Conditioning System:

1.10.1 The CH-46 trainer incorporates its own air conditioning system. Air conditioning for the CH-46 is handled by two (2) external 208 V, 3 phase, 60Hz, 96,000 BTU air conditioner units, manufactured by Engineered Environments, Inc.

1.11 Motor Generator Sets: N/A

1.12 Enclosure:

1.12.1 Device 2F172 is a Mobile Enclosure System Training Device that is designed for use in various locations. The enclosure used is referred to as the Device Shelter. The shelter provides for optimal operating environment and for the various equipment that makes up the Training Device and personnel. The shelter is designed to be deployable and to be placed on a level concrete pad.

The shelter is fully transportable and designed for fixed operation at various locations. It is equipped with controls, devices, instruments and environmental protection to ensure maximum safety and survivability. The device shelter features certain transport and installation characteristics inherent in the shelter design. Overall dimensions allow for transport by air, land and sea. For shelter leading particulars refer to Installation Manual.

Appendix B

SOW 6643-A-0398

2.1 Illustrations:

Complete lists of illustrations are available at each training device location.

3.1 Mission Essential Subsystem Matrix (MESM):

A Training device is in a PMC status, when it’s placed in an operational ready condition but is less than 100% operational. A PMC trainer may not be capable of performing all mission functions, but is capable of performing at least one mission or more. PMC levels are described by Equipment Operational Capability (EOC) codes, which relate a particular system/subsystem to a specific EOC Code. The EOC code also relates to the Partial Mission Capability Factor (PMCF), the percentage of degradation that is used to determine Partial Mission Capability Quantity (PMCQ).

EOC	% Mission Capable	% of Deduction
B	100	0
C	94-99	5
D	88-93	10
E	82-87	15
F	76-81	20
G	66-75	30
H	56-65	40
J	51-55	50
Z	LESS THAN 50	100

Appendix B

SOW 6643-A-0398

4.1 CONTRACTED TRAINING TIME (CTT)

Training Operations shall be provided in each FY as per exercised contract CLIN/SLIN from one of the stair steps below:

2F172-1 CH46E APT Contracted Training Time (CTT) Monday thru Friday (M-F) MCAS Futenma, Okinawa			
Hours per Day (HPD)	**Hours per Week (HPW)**	**Start Time (local) (Notional)**	**End Time (local) (Notional)**
2	**10**	1000	1200
4	**20**	0800	1200
6	**30**	0800	1400
Remark(s) / Note(s)			
1-CTT time represents continuous hours of device operational training availability from initial START time. 2-CTT does not include weekend (Saturdays/Sundays) training, and no weekend training planned. 3-CTT daily Start Times are notional and may vary/shift with coordination and direction from the Contracting Officer's Representative (COR)/site scheduling authority and may change during the course of the Task Order. (Refer to Addendum A, paragraph 4.3.1). 4-CTT may be shifted between devices with coordination and direction from the Contracting Officer's Representative (COR) and Contractor Site Manager. 5- To facilitate compressed work weeks (less than five (5) training days), due to site schedules, the Government may exceed the device daily HPD requirement up to a maximum of (8) HPD, not-to-exceed (NTE) the contracted HPW, without incurring Premium Time (PT) requirements, and only with prior COR and Site Manager coordination. (Refer to Addendum A paragraph 4.1.3.4, Premium Time) 6.- Training hours may be transferred to CH-53E during training day as long as total of both CTTs does not-to-exceed 8 hours.			
Table 4.1			

Appendix B

SOW 6643-A-0398

5.1 Aircraft Common Equipment (ACE)

Complete list of ACE can be found in the inventory list provided at each site.

The Material Support Package (MSP) inventory of this solicitation will be determined by the results of CDRL A005 “COMS/CMS CONTRACTOR INVENTORY/UTILIZATION REPORT OF GFP/GFI”. The results of the transition inventory will be verified and signed by the site COR prior to Contractor’s submission of CDRL A002 to the Government.

NOTE: Whenever minor configuration changes, calibration or adjustment of aircraft common equipment is required for use in the trainer, such information shall be provided in this Appendix.

5.2 Trainer Equipment. Depot level (D-level) maintenance for the following trainer equipment is the responsibility of the government.

Complete list of D-level trainer equipment will be provided at each site.

5.2.1 Trainer Support Package (TSP): Includes Tools/Support Equipment, Spare Parts, Technical Data Support Package, and Software Support Material. The formal inventory (i.e. tools/support equipment, spare parts, technical data support package, and software support material, etc.) shall be those items identified during the mobilization period and stated in the yearly Inventory/Utilization Data Report. The Contractor shall comply with the development, maintenance and submission requirements for this report, as stated in the applicable CDRL item."

Appendix B

SOW 6643-A-0398

6.1 PARTIAL MISSION CAPABILITY (PMC)STANDARD

NOTE: PMC is the material condition of a training device that cannot perform all of its missions. See EOC chart on 3.1 of Appendix for percentages.

PMC LISTING
DEVICE 2F172 AIRCREW PROCEDURES TRAINER (APT)

FAILED EQUIPMENT	%DEGRADATION
SUBSYSTEM	**Equipment Operational Capability (EOC) CODE**
1. TRAINEE STATION - COPILOT INSTRUMENT PANEL	
Master Caution Light	G
Airspeed Indicator	D
Attitude Indicator	E
Barometric Altimeter	D
Radar Altimeter	F
Triple Tachometer	D
Bearing Distance Heading Indicator (BDHI)	E
Vertical Velocity Indicator	D
Clock	D
Dual Torquemeter	D
ICS Control Panel/System	D
ICS Selector Panel	D
Radio Transmitter Selector Panel	D
Radio Selector Panel	D
APR-39 Indicator	D
1A. TRAINEE STATION - PILOT INSTRUMENT PANEL	
Master Caution Light	G
Airspeed Indicator	D
Attitude Indicator	E
Barometric Altimeter	D
Radar Altimeter	F
Triple Tachometer	D
Bearing Distance Heading Indicator (BDHI)	E
Vertical Velocity Indicator	D
Clock	D
Dual Torquemeter	D
ICS Control Panel	D
ICS Selector Panel	D
Radio Transmitter selector Panel	D
Radio Selector Panel	D
Attitude Indicator Switch	D
Cruise Guide Switch	D

Appendix B

SOW 6643-A-0398

SUBSYSTEM	EOC CODE
1B. TRAINEE STATION - MISCELLANEOUS	
Standby Compass	C
Master Caution Panel	G
Gas Generator (Ng) Tachometers	E
Turbine Inlet Temperature (T5) Indicators	E
Dual Engine Oil Pressure Indicator	E
Dual Fuel Quantity Gauge	E
Dual Engine Oil Pressure Gauge	E
Fire Detector Warning System	G
APP Fire Light	F
Engine Fire Control Panel	F
Forward Transmission Oil Temperature Gauge	F
Aft Transmission Oil Temperature Gauge	F
Forward Transmission Oil Pressure Gauge	F
Aft Transmission Oil Pressure Gauge	F
Utility Hydraulic Pressure Gauge	F
No. 1 Hydraulic Boost Pressure Gauge	G
No. 2 Hydraulic Boost Pressure Gauge	G
Cyclic Trim Indicators	G
Cruise Guide Indicator	G
IFF Code Switch	C
Blade Fold System	C
1C. TRAINEE STATION - CENTER AND CANTED CONSOLE	
IFF	D
TACAN	D
X-Band Radar Beacon Control Panel	C
Arm Control Indicator	F
Detecting Set Control Panel	E
Countermeasures Dispensing Panel	E
AN/ALQ-157 IRCM Panel	E
BDHI Control Panel	D
Juliet Control Panel	F
VHF/UHF Control Panel	E
HF Control Panel	E
Stick Position Indicator	F
ADF Control Panel	D
Ramp Control Panel	D
UHF Command Control Panel	D
AFCS Control Panel - Altitude Hold	G
Heading Hold	G
Cyclic Trim	G
AFCS	H
Engine Condition Control Panel	G
Power Management System	G

	Flight Control Boost Panel	G
	Cargo Hook Control Panel	C
	Parking Brake	C
	Fuel Quantity Indicator	D

	SUBSYSTEM	**EOC CODE**
	1D. TRAINEE STATION - OVERHEAD CONSOLE	
	Compass System Controller	E
	Interior Lighting Control Panel	C
	Fuel Control Panel	D
	Master Power Control Panel	G
	Blade Fold Control Panel	F
	Electrical Systems APP/GEN	F
2.	**INSTRUCTOR/OPERATOR STATION (IOS)**	
	IOS Keyboard / Keypad	D
	Instructor CRT Displays	G
	Instructor ICS / Radio System	F
	Demonstration Mode	D
	Performance Playback	D
	Emergency OFF (Hydraulics)	G
	Emergency OFF (Electrical)	G
	Emergency Lighting System	F
3.	**VISUAL SYSTEM**	
	Forward Field Of View (Channel #1)	J
	Left Side Field Of View (Channel #2)	H
	Right Side Field Of View (Channel #3)	H
	Left Side Field Of View (Channel #4)	F
	Right Side Field Of View (Channel #5)	F
4.	**AUDIO / AURAL SYSTEM**	
	1 Or More Environmental Sounds	F
	Observer Station Audio	E
5.	**MISCELLANEOUS SUBSYSTEMS**	
	Motion System	D
	Printer Plotter	C
	Entry Ramp	E
	Cockpit Air Conditioning	J
	Flight Control System	J
	Pedals	J
	Collective	F
	Cyclic	Z
	Trim (coolie)	F
	Trim (CDRB)	F
	Trim (Collective)	F
	Collective Trim System	H
	Pedal Trim System	F

Rotor Brake System	E
Emergency Throttle System	G
Wheel Brakes	E
Radio Mike Switch	D
Global Positioning System (GPS)	F
Ground Proximity Warning System (GPWS)	F
NVG	F
SUBSYSTEM	**EOC CODE**

6. INSTRUCTOR CONSOLE (IOS)

INSTRUCTOR CONSOLE EQUIPMENT (ICE)	E
IOS PRINTER UNIT	D
INTERACTIVE DISPLAY	G
DATA ENTRY SYSTEM-mouse	C
DATA ENTRY SYSTEM -KEYBOARD	D
AUDIO SYSTEM (HEADSETS/MICROPHONE/SPEAKERS)	F

7. COMPUTER/PERIPHERALS

HOST COMPUTER	Z
IMAGE GENERATOR COMPUTER	J
IOS COMPUTER	H
TEN COMPUTER	H
FLIR COMPUTER	G
PRINTER	D
AIRCRAFT INTEGRATION MODE	H

8. POWER DISTRIBUTION SYSTEM

MAIN POWER DISTRIBUTION UNIT	Z
UPS	G